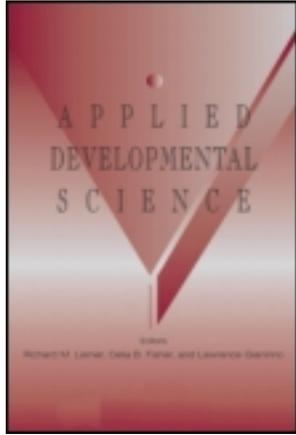


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## Applied Developmental Science

Publication details, including instructions for authors and subscription information:

<http://www.tandfonline.com/loi/hads20>

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Published online: 22 Apr 2014.

To cite this article: Adar Ben-Eliyahu, Jean E. Rhodes & Peter Scales (2014) The Interest-Driven Pursuits of 15 Year Olds: “Sparks” and Their Association With Caring Relationships and Developmental Outcomes, Applied Developmental Science, 18:2, 76-89, DOI: [10.1080/10888691.2014.894414](https://doi.org/10.1080/10888691.2014.894414)

To link to this article: <http://dx.doi.org/10.1080/10888691.2014.894414>

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# The Interest-Driven Pursuits of 15 Year Olds: “Sparks” and Their Association With Caring Relationships and Developmental Outcomes

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In this study, we examined the characteristics of adolescents’ deep interests or “sparks,” the role of relationships in supporting the development of sparks, and whether having a spark was associated with positive developmental outcomes. Participants included 1,860 15 years olds from across the United States who participated in the national Teen Voice survey (56% European American,  $N = 1,860$ ). Profile-centered analyses suggested that sparks are characterized by the intensity of positive feelings, immersion, and utility. The strongest sparks were associated with pursuits requiring more interpersonal engagement, such as sports, drama and dance, participating in politics, and serving others. Spark intensity was related to better social, academic, and affective outcomes. Additionally, youth with stronger sparks reported more encouragement, financial support, and transportation to spark activities from parents, mentors, extended-family, neighbors, school-based adults, and peers. Benefits of adolescents’ engagement in interest-driven activities and the role of caring relationships in supporting such interests are highlighted.

A growing body of literature suggests that engagement in satisfying and optimally challenging interest-driven activities can provide individuals with an enhanced sense of well-being and happiness (Blomfield & Barber, 2011; Seligman & Csikszentmihalyi, 2000; Fredricks & Eccles, 2006; Larson, 2011; Seligman, 2002; Vallerand et al., 2003). Within this context, researchers have explored how immersion in such activities can generate a range of positive experiences including “flow” experiences (Abuhamdeh & Csikszentmihalyi, 2012a, 2012b), characterized by deep concentration, sharp focus, and, paradoxically, deep relaxation. The experience of flow can be so engrossing and exhilarating that it becomes its own reward, a vital source of happiness, and a driving force of achievement in life (Csikszentmihalyi, 1990). Others have focused on the value that activities have for youth

(Eccles, 2005; Eccles et al., 1983), with a specific focus on the utility or usefulness that certain subjects or activities have for longer term goals such as career aspirations (Durik, Vida, & Eccles, 2006). At the core of both of these approaches are the inherently adaptive and positive forms of psychological processes that motivate learning. Drawing from this work, researchers from within the positive youth development (PYD) framework (Lerner, Lerner, & Benson, 2011; Schwartz, Pantin, Coatsworth, & Szapocznik, 2007) have explored the developmental benefits of youth’s engagement in intense interests or “sparks” (Benson & Scales, 2009). Scales, Benson, and Roehlkepartain (2011) characterized a spark as a “passion for a self-identified interest, skill or capacity that metaphorically lights a fire in the adolescents’ life, providing energy, joy, purpose and direction” (p. 264). Drawing from a large, national dataset, Scales et al. (2011) found that a range of factors, including sparks, relational opportunities, and a sense of empowerment were associated with better academic,

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psychological, social, and behavioral well-being for adolescents.

In the current study, we build on these findings to explore sparks in greater depth. Because we were particularly interested in pursuits that were indicative of the kind of engagement that characterize flow states (Abuhamdeh & Csikszentmihalyi, 2012a, 2012b) and value (Eccles, 2005), we sought to decipher subgroups of adolescents on the basis of their investment in their sparks. We applied an ecological assets model perspective (Bowers et al., 2011; E. Bronfenbrenner, 1977; U. Bronfenbrenner, 1965; U. Bronfenbrenner & Ceci, 1994) to explore the role of parents, teachers, mentors, other caring adults, and peers that support the development of these intensive interests.

## Background

Researchers generally define interests as a person's "long-term relationship with a specific domain, characterized by positive feelings, higher values, and deeper knowledge that displays itself in the tendency to reengage voluntarily in interactions over time" (Hofer, 2010, p. 152). Certain criteria are included when determining whether a domain is of particular interest and in calibrating that interest. These include the extent to which interests are self-initiated, meaningful (i.e., providing emotions of social relatedness, competence, and pleasantness), novel, challenging, and valued highly as a means of contributing to a goal or ideal self (Hofer, 2010; Krapp, 2005; Krapp, Hidi, & Renninger, 1992; Larson, 2011; Renninger & Hidi, 2011). Along these lines, Markus and Nurius (1986) have referred to possible selves as an individual's ideas of what they might become, what they would like to become, and what they fear becoming. The concept of possible self is particularly relevant to understanding the development of interests because such visions are the motivational link between the present and imagined future and can facilitate self-regulation, steering behavior toward attainment of goals (Hofer, 2010; Oyserman, Bybee, Terry, & Hart-Johnson, 2004).

Of course, conceptualizing one's possible self and, more generally, moving from exploration to actual interests depends, at least in part, on a young person's capacity for conscious self-awareness. The move toward a defined interest enables one to determine whether a given interest domain fits with conceptions of the self, and to evaluate whether his or her experiences within that domain are characterized by the aforementioned criteria (i.e., self-initiation, challenge, relatedness, novelty, positive feelings, and values) (Oyserman et al., 2004). As such, engagement and interest development may be particularly important in the middle adolescent years, as individuals become more focused on identity development,

more adept at abstract, complex, relativistic, and hypothetical thinking, and better able to evaluate interest domains in terms of their alignment with notions of possible selves (Larson, 2011; Pintrich & Zusho, 2002). Moreover, it is during this period that adolescents begin high school, gain greater autonomy from their parents, and begin to grapple with questions of identity and purpose (Collins & Steinberg 2006; Erikson, 1968; Damon, Menon, & Bronk, 2003). By high school, adolescents have generally been through significant physical changes, including puberty, and are increasingly challenged with making decisions regarding high-risk behaviors, such as sexual activity, violence, and alcohol, tobacco, and other drug use. Even though adolescents have an increased capacity for self-regulation (Pintrich & Zusho, 2002), their behaviors are strongly influenced by their peers. Consequently, they are more prone to participate in "sensation seeking" activities such as drug use (Romer, Duckworth, Sznitman, & Park, 2010). Engagement in interest-driven activities can serve to offset such influences, leading adolescents to defer gratification by focusing on activities that lead to skill development (Diener, Emmons, Larsen, & Griffin, 1985; Lerner et al., 2011; Seligman & Royzman, 2003). Similarly, Romer et al. (2010) found that having a longer-term perspective was positively associated with the ability to delay gratification.

Consequently, a deep level of engagement in interest-driven activities has been associated with the avoidance of risk as well as a range of developmental benefits (Diener et al., 1985; Lerner et al., 2011; Romer et al., 2010; Seligman & Royzman, 2003; Vallerand et al., 2003) across school and non-school contexts (Dawes & Larson, 2011; Eccles & Wigfield, 2002). Scales et al. (2011) proposed that having a spark energizes an individual and leads towards general growth and development. This energizing can be considered in the context of Fredrickson's broaden-and-build theory (Fredrickson, 2001), according to which positive emotions such as interest and flow, broaden individual's thought-action repertoires by creating an urge to play, explore, take in new information and experiences, and expand the self in the process. In this way, having a spark not only creates a positive experience within a specific domain, but the positive valence can generalize, leading to general growth and development. Additionally, learning and developing a certain talent might teach individuals to broaden their valuing of learning and developing in general, thereby adopting mastery goal orientations (Dweck & Legget, 1988). This line of work challenges the notion that positive emotions signal to the individual that everything is good and that one can stop exerting effort (Carver, Lawrence, & Scheier, 1996), but rather posits that the positive emotions that accrue from pursuing one's deep interests with tenacity and becoming more adept continue to promote individual striving toward additional

goals and mastery (Seligman & Csikszentmihalyi, 2000; Lerner et al., 2011; Seligman & Royzman, 2003). As such, youth with deep interests are likely to be more engaged and invigorated, not just in their sparks activities, but in their schools and communities, resulting in higher grades, attendance, and a mastery focus in school (Vallerand et al., 2003).

Of course, decisions to engage in certain behaviors or interest areas cannot be understood purely in terms of cognitive and motivational processes. Indeed, adolescents' capacity to pursue their interests is often conditioned by the investment of their families, schools, peer groups, and communities in supporting these pursuits (U. Bronfenbrenner & Ceci, 1994; Buday, Stake, & Peterson, 2012; Lerner et al., 2011; Simpkins, Fredricks, & Eccles, 2012). Learning and mastering interest-related skills can require a considerable financial and time commitment, and youth's access to people who are willing to make such investments can affect their progression from nascent interests to deep passions. Moreover, many creative interests are not well supported in schools, heightening the need for more private investments in skills development. Such resources are not equally distributed across individuals and settings, as they depend on the resources and nature of the organizations in which youth participate and the quality and availability of youth's relationships with parents, peers, and extended network of supports and settings (Bowers et al., 2011; U. Bronfenbrenner & Ceci, 1994; Buday et al., 2012; Cairns, Elder, & Costello, 1996; Lerner et al., 2011).

At the most basic level, youth with access to caring adults who expose them to athletic programs, museums, zoos, music, theater, and libraries are more likely to develop interests in these domains. Moreover, when youth have access to rich, socially interactive learning environments that stretch them to higher levels of achievement, cognitive growth is facilitated (Rhodes, 2005; Rogoff, 1990; Vygotsky, 1978). For example, Scales, Benson, and Mannes (2006) reported that young people with more exposure to developmental relationships through participation in youth programs, religious activities, and community service in middle school, not only had more frequent interaction with non-familial adults but also qualitatively different interactions. These interactions were often characterized by meaningful intergenerational conversations where adult values are expressed and youth opinions are solicited and considered.

To explore adolescents' interests, we thus considered these broader social-cultural contextual influences, focusing on the support provided by parents, extended family, adults at school, neighbors, friends, mentors, and other caring persons. In doing so, we offer a complementary perspective to the more individualistic emphasis on emotional regulation or individual "grit," in accounting for adolescents' capacity to develop

expertise and engage in interest-driven learning (Tough, 2012).

## STUDY HYPOTHESES AND FOCUS

The current study was somewhat exploratory in that we examined how the emerging construct of deep interests or "sparks" is related to a variety of social, emotional, and academic outcomes and demographic characteristics in a sample of young adolescents. Within this context, we applied an ecological assets perspective to determine how relationships support the development of deep interests. Although previous researchers have considered sparks as either present or absent (e.g., Scales et al., 2011), youth's interests and passions are likely to fall on a continuum. As a first step, we sought to empirically delineate how components of sparks combine using person-centered analyses (Magnusson, 2003; Muthén & Muthén, 2010), which allow examination of the varying combinations of the subcomponents of spark under the assumption that their combination yields a holistic construct that cannot be decomposed. Given the situated nature of engagement in interests, we also sought to investigate how emotional and instrumental supports were related to sparks.

Finally, we investigated how sparks were related to a range of outcomes amongst 15 year olds. We proposed that adolescents with deeper interests would have more support for these interests, and that having deep, impassioned interests would be associated with important outcomes across the social, academic, and affective domains. We were also interested in hours per week spent online. Recent research points to both creative and skill building use of online digital media (Ito et al., 2013) as well as passive online use such as watching YouTube videos and social networking (Lenhart, Purcell, Smith, & Zickuhr, 2010). Thus, we were interested in whether online use would be related to certain forms of activities over others, especially because the passive popular online engagement was recently found to be associated with negative social comparisons (Pantic et al., 2012; Whitehill, Brockman, & Moreno, 2013).

## METHOD

### Participants

Participants included 1,860, 15 years olds from across the United States who were participating in the Teen Voice study (Scales et al., 2011). About half identified as male (49.5%), and 1,035 (55.6%) identified as White, 339 (18.2%) as Hispanic, 278 (14.9%) as Black/African American, 82 (4.4%) as mixed race, 77 (4.2%) as Asian

or Pacific Islander, 10 (0.5%) as some other race or ethnicity, and 30 (1.6%) did not identify a racial or ethnic group. The youth represented a range of socioeconomic statuses, as measured by parents' highest education level, with 172 (9.3%) not having completed high school, 992 (53.4%) having completed high school but not college, 406 (21.8%) having completed college, and 239 (12.8%) having completed graduate school.

### Procedure

Participants were recruited through the Harris Poll Online, which includes millions of people who have agreed to participate in Harris Interactive surveys. Criteria for participation in the study included being 15 years old and a U.S. resident. Password protected email invitations were sent to thousands of individuals identified either as U.S. residents and 15 years old, or U.S. residents and 18 years olds with a 15-year-old child in the household. Reminder invitations were sent two days after the initial email to those who had not yet completed the survey. Participants received points in a rewards program and were offered entry in a sweepstakes drawing for completing surveys. This recruitment process resulted in 1,860 participants completing surveys between October 12 and November 9, 2009. Online surveys were self-administered, and participants took an average of 20 minutes to complete the surveys.

### Measures

Below we provide details regarding the study measures. Some of the scales are single indicators, whereas others were the simple mean of the scale items as described in the following section.

#### *Participant Characteristics*

**Demographic characteristics.** Participants reported demographic characteristics including gender, race, and parents' highest level of education by choosing from multiple choices presented in each question separately.

**Spark.** Youth were asked about their talents, interests, and hobbies. To determine whether they had a talent, interest, or hobby that met the criteria for being named a "spark," a follow-up question taken from the Search Institute Thriving Orientation Survey (TOS; Benson & Scales, 2009) was asked that included a description of the criteria of sparks: "When people are really happy, energized, and passionate about their talents, interests, or hobbies, we say they have a 'spark' in their life. This spark is more than just interesting or fun for them. They are passionate about it. It gives them joy and energy. It is a really important part of their life

that gives them real purpose, direction, or focus. Do you have this kind of spark in your life?" Respondents could answer with yes, not sure, or no. Respondents who answered "not sure" and "no" were included in the "No Spark" group.

Those who answered "yes" were counted as having a spark and were asked to respond to an additional 7 items about their main spark. Three items tapped into the *flow* component of spark: Youth were asked, when they were engaged with their primary spark how much did they (1) "feel joy or energy;" (2) "lose track of time;" and (3) "feel a sense of purpose or focus." Four additional items tapped into components of spark *value*: Youth were asked, how much has pursuing their spark (4) "Given me skills that will help me in a job or career;" (5) "Helped me get along with other people;" (6) "Given me chances to improve my family, school, or community;" and (7) "Encouraged me to learn new or extra things outside of the schoolwork I have" (1 = *not at all*, 2 = *some*, 3 = *a lot*, 4 = *a great deal*).

#### *Social, Academic, and Affective Outcomes*

**Social behaviors.** Four forms of social behaviors were examined as outcomes of spark. *Leadership* and *vandalism* each were taken from the Search Institute A&B survey (Scales et al., 2011). They were measured with single items on a 5-point scale from 1 = *never* to 5 = *5 or more times*, asking, respectively, how many times in the last year youth had been a leader in a group or organization, and how many times in the last year they had damaged property just for fun (such as breaking windows, scratching a car, putting paint on walls, etc.). *Social good contribution* was measured using a single item taken from the National Promises Study (Scales et al., 2008), asking youth how many hours in an average week, including weekends, they spend doing "volunteer work to help other people or to help make your community a better place." There were four response options for this question: *none* (scored as 1), *up to 2 hours*, *2 to 5 hours*, *more than 5 hours* (scored as 4). *Civic engagement* (Cronbach's  $\alpha = .86$ ) was measured using six items from the Monitoring the Future study (Johnston, Bachman, & O'Malley, 2006), which asked youth how important it was to them to improve race relations or help people who were economically disadvantaged. This was a 4-point response scale (1 = *not important*, 2 = *somewhat important*, 3 = *quite important*, 4 = *extremely important*). Finally, youth were asked to estimate the amount of hours they spend *online* per week.

**Academic outcomes.** Four academic related outcomes were examined.

**Mastery goals** (Cronbach's  $\alpha = .80$ ) was a 3-item scale adapted from Anderman, Urdan, and Roeser

(2005), asking how much statements like this described the youth: “One of my goals in school is to learn as much as I can.” Response choices were from 1 = *does not describe me at all* to 4 = *describes me a lot*. Attendance was a single item taken from the Search Institute A&B survey (Benson, Leffert, Scales, & Blythe, 1998) asking how many days of school a youth skipped class in the last 4 weeks. To calculate *grade point average (GPA)*, youth were asked in how many classes “in your most recent school marking period” they received grades of A, B, C, D, or below D. Four points were awarded for As, 3 for Bs, and so on, and GPA was calculated as the mean grade for the total number of classes. (The number of classes taken was controlled for in these calculations, so that small numbers of classes did not artificially inflate a student’s GPA.) *School effort* was a single item from the National Promises Study (Scales et al., 2008) asking how often the respondent works up to his or her ability in school, on a 4-point scale from 1 = *never* to 4 = *very often*.

**Affective outcomes.** Three indicators of well-being were used to examine how having strong passions and interests about something influences general well-being. *Sense of purpose* was comprised of five items (Cronbach’s alpha = .76) taken from the Search Institute TOS (Benson & Scales, 2009), which incorporated conceptual aspects of purpose described in Damon et al. (2003). Four items were on a 4-point scale from 1 = *strongly disagree* to 4 = *strongly agree* (e.g., I feel hopeful when I think about my future) and a fifth item “Finding purpose and meaning in my life . . .” on a four-point scale from 1 = *not at all important* to 4 = *extremely important*. *Positive future outlook* was one item taken from the Search Institute TOS (Benson & Scales, 2009) asking “How certain are you that you will have a good life when you are an adult?” Participants could choose one of five answer options from 1 = *not at all certain* to 5 = *extremely certain*. *Worries* (Cronbach alpha = .79) was a modified version of five items asking about possible worries or concerns, taken from the Washington Post/Kaiser Family Foundation/Harvard University African-American Men Study (Washington Post/Kaiser Family Foundation/Harvard University, 2006). For example, how worried are you “about doing poorly in school.” These items had a four-point answer scale from 1 = *very worried* to 4 = *not at all worried*.

#### *Relationships Supporting Youth Sparks*

To investigate relationships supporting sparks, participants were asked about the extent to which different people in their lives provided encouragement, financial help, and transportation to spark-related activities. Three separate questions were asked, each followed by

the list of people. Participants were asked to respond using a 4-point scale (1 = *never*, 2 = *once in a while*, 3 = *sometimes*, 4 = *often*). “How often do the following people help you develop your main spark by giving you encouragement or support, or by pushing you to get better at those talents, interests, or hobbies?” was used to assess *Encouragement* or emotional support. “How often do the following people help you develop your main spark by providing money or financial help?” was used to assess *Funding* assistance. And “How often do the following people help you develop your main spark by providing transportation?” was used to assess help with *Transportation*. Participants were asked to rate how often each of the following people provide such assistance: your parents (Parents); your grandparent/s or other family members (Extended family); your neighbors (Neighbors); your friends (Friends); teachers, counselors, or other adults at your school (School); your mentor (Mentor); A coach or other adult in a youth organization or after-school program (Adult).

#### Analysis Plan

The analysis plan aligned with our three research questions. First, we aimed to empirically delineate whether there were varying intensities of spark by employing a latent class analysis on the seven indicators of spark, that is, the three indicators of spark flow and four indicators of spark value (Asparouhov & Muthén, 2013; Magnusson, 2003; Muthén & Muthén, 2010). In addition to the participants who reported on spark activities, there was a group of youth who reported that they had no spark. This group was included in further analyses in order to determine how varying levels of spark were related to a variety of outcomes, we next ran three separate Multiple Analysis of Variance (MANOVA): (1) social behaviors, (2) academic outcomes, and (3) affective outcomes. In all of our analyses across all the MANOVAs, we report the results for the Bonferroni correction to account for the many simultaneous analyses. To investigate how varying levels of support were associated with spark (on the Low, Moderate, and High Spark groups), we used the DCON function in the 3-Step procedure with latent classes in MPlus7 (Asparouhov & Muthén, 2013) on three forms of support: encouragement, funding, and transportation.

## RESULTS

### Profiles of Spark

Latent class profile analyses in MPlus version 7 were used to determine how the seven components of spark naturally grouped together to form groups of individuals (Muthén & Muthén, 2010). A 2-group through 4-group

solution was examined. The number of participants in each group and comparison between the Bayesian Information Criteria (BIC) and the Akaike Information Criteria (AIC) across latent class solutions (Nylund, Asparouhov, & Muthén, 2007) and entropy were used to determine how many groups of sparks fit the data best. As recommended by Nylund et al. (2007), solutions with lower values of BIC and AIC are considered to have a better fit. Additionally, groups with less than 25 participants may be an artifact of the forced solution; therefore, any solution with a group comprised of less than 25 participants was thought to be questionable. A 4-group solution did not converge and had one group with just 10 participants, suggesting it is not a good description of the data. A 2-group solution and a 3-group solution fit the data well. Because the model fit was similar across these two solutions (2-group: BIC = 24,614.048, AIC = 24,497.128; 3-group: BIC = 24123.641, AIC = 23,964.205), as well as similar entropy (.77), A 3-group solution was chosen as it is more descriptive of the data and in line with the recommendation for lower BIC and AIC.

Overall the three groups that emerged differed in their levels of the components of sparks as indicated by a Multiple Analysis of Variance (MANOVA) ( $F(14, 2986) = 317.066, p < .001$ ). Further examination between groups revealed between group differences across the seven components of sparks ( $F_{\text{Joy}} = 694.68; F_{\text{LoseTrack}} = 120.77; F_{\text{Focus}} = 677.07; F_{\text{Skills}} = 526.67; F_{\text{GetAlong}} = 543.29; M_{\text{ImproveSurroundings}} = 483.29; M_{\text{Learning}} = 585.05, p < .001$  for all tests). In examining which group differences were significant, post-hoc analyses (Bonferonni-corrected) revealed significant differences between the

groups on all seven indicators of sparks. Individuals in the Low Spark group (see Figure 1) reported the lowest levels of joy and energy ( $M = -1.39, SE = .04$ ), not really losing track of time ( $M = -.73, SE = .06$ ) or being highly focused ( $M = -1.30, SE = .05$ ). They reported the lowest levels of feeling that their spark activity provided skills for future career choices ( $M = -.82, SE = .05$ ), how to get along with others ( $M = -.96, SE = .05$ ), or improve their surroundings ( $M = -.70, SE = .05$ ). They also thought that their sparks activity provided little encouragement for learning ( $M = -.98, SE = .05$ ). The High Spark group reported the highest level on all of these, suggesting that they recognize the utility value of their spark activity for current and future quality of life, and also consistently experience flow when engaged with their spark ( $M_{\text{Joy}} = .66, SE_{\text{Joy}} = .03; M_{\text{LoseTrack}} = .37, SE_{\text{LoseTrack}} = .04; M_{\text{Focus}} = .74, SE_{\text{Focus}} = .03; M_{\text{Skills}} = .89, SE_{\text{Skills}} = .04; M_{\text{GetAlong}} = .86, SE_{\text{GetAlong}} = .04; M_{\text{ImproveSurroundings}} = .89, SE_{\text{ImproveSurroundings}} = .04; M_{\text{Learning}} = .87, SE_{\text{Learning}} = .03$ ). The Moderate Spark group was somewhere in the middle: neither very low on these nor reaching a state of flow and high perceived value ( $M_{\text{Joy}} = .06, SE_{\text{Joy}} = .03; M_{\text{LoseTrack}} = .02, SE_{\text{LoseTrack}} = .03; M_{\text{Focus}} = -.02, SE_{\text{Focus}} = .03; M_{\text{Skills}} = -.28, SE_{\text{Skills}} = .03; M_{\text{GetAlong}} = -.21, SE_{\text{GetAlong}} = .03; M_{\text{ImproveSurroundings}} = -.33, SE_{\text{ImproveSurroundings}} = .03; M_{\text{Learning}} = -.22, SE_{\text{Learning}} = .03$ ).

In examining the types of activities reported across the different groups there were slight differences between spark groups ( $\chi^2(32) = 60.32, p = .002$ ). Youth in the Low Spark group had a somewhat even distribution (20–25%) of computer/electronic use, art/dance/drama/music, and sports engagement (Table 1). This

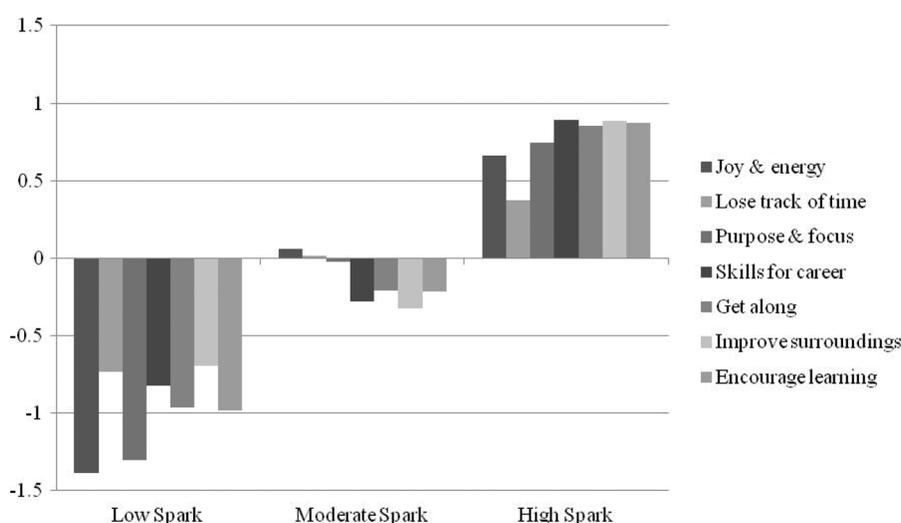


FIGURE 1 The 3-group latent class profiles solution for the 7 components of sparks.

Note.  $N_{\text{Low Spark}} = 263; N_{\text{Moderate Spark}} = 756; N_{\text{High Spark}} = 483$ . In addition to these three groups, a group of 358 youth reported that they did not have a spark. This group of youth was labeled the “No Spark” group.

TABLE 1  
Types of Activities Reported as Sparks, Organized by Spark Group

	<i>Low Spark</i>		<i>Moderate Spark</i>		<i>High Spark</i>		<i>Total</i>	
	<i>Count</i>	<i>%</i>	<i>Count</i>	<i>%</i>	<i>Count</i>	<i>%</i>	<i>Count</i>	<i>%</i>
Using computers, electronics, or other types of technology	66	25.10	118	15.60	78	16.10	262	17.40
Participating in or leading art, dance, drama, music, writing, etc.	65	24.70	223	29.50	141	29.20	429	28.60
Participating in sports, athletics, or other physical activity	56	21.30	225	29.80	127	26.30	408	27.20
Studying, reading, doing research, or other ways of learning	24	9.10	48	6.30	31	6.40	103	6.90
Being in nature, caring for animals, or participating in out	17	6.50	43	5.70	23	4.80	83	5.50
Serving others, participating in politics, etc.	8	3.00	15	2.00	7	1.40	30	2.00
Doing construction, architecture, or other types of mechanic	7	2.70	14	1.90	8	1.70	29	1.90
Doing religious or spiritual activities, or learning about religion	6	2.30	23	3.00	34	7.00	63	4.20
Other	4	1.50	8	1.10	2	0.40	14	0.90
Being an entrepreneur, running a business, or inventing things	3	1.10	12	1.60	5	1.00	20	1.30
Teaching, leading others, or public speaking	3	1.10	10	1.30	16	3.30	29	1.90
Being with friends/talking with friends/hanging out	2	0.80	8	1.10	4	0.80	14	0.90
Cooking	1	0.40	3	0.40	2	0.40	6	0.40
Participating in scouts	1	0.40	0	0.00	2	0.40	3	0.20
All/Many	0	0.00	3	0.40	1	0.20	4	0.30
Being with family	0	0.00	3	0.40	0	0.00	3	0.20
ROTC	0	0.00	0	0.00	2	0.40	2	0.10
Total	263	100.00	756	100.00	483	100.00	1502	100.00

Note. According to a Pearson-Chi Square analysis, the distribution of types of activities differed from chance  $\chi^2(32) = 60.317, p = .002$ .

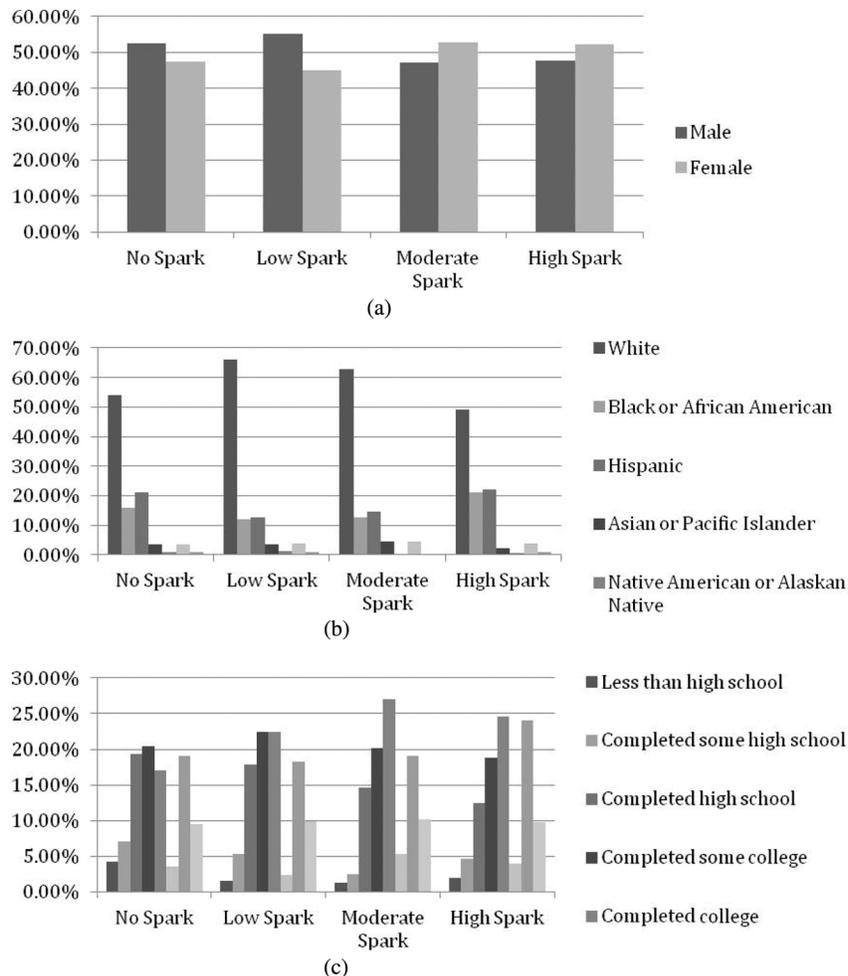


FIGURE 2 Demographic characteristics: a) gender; b) race; and c) parent education of participants in each spark group.

TABLE 2  
Mean and Standard Error for Social Behaviors by Spark Groups

	Vandalism		Leadership		Social Good		Civic Engagement	
	Mean	Std. Error	Mean	Std. Error	Mean	Std. Error	Mean	Std. Error
No Spark	1.35	0.06	2.42 <sup>ab</sup>	0.11	1.85	0.07	2.56 <sup>a</sup>	0.05
Low Spark	1.24	0.05	2.23 <sup>a</sup>	0.11	1.60	0.07	2.28 <sup>b</sup>	0.05
Moderate Spark	1.20	0.03	2.70 <sup>b</sup>	0.06	1.66	0.04	2.54 <sup>a</sup>	0.03
High Spark	1.19	0.04	3.27 <sup>c</sup>	0.07	1.92	0.04	3.01 <sup>c</sup>	0.03
	$F=2.42$	$p=.064$	$F=27.99$	$p<.001$	$F=9.79$	$p=.001$	$F=62.63$	$p=.001$

Note. Different letters denote significant differences between spark groups (rows) on the particular outcome (columns) as found in post-hoc group comparisons. For example, the means of “a” and “b” are significantly different from each other, whereas there was no significant difference between “a” and “ab.”

distribution is somewhat different from the Moderate and High Spark groups, where only 15–16% of youth in those groups reported computer/electronic use as their main spark, and slightly more youth (26–29%) were involved in art/dance/drama/music or sports.

Finally, in looking at the gender, racial, and parent education of youth in these different spark groups, there is little difference across groups (see Figure 2). While there were comparable distributions of gender across spark groups ( $\chi^2(3)=6.75, p=.080$ ), racial distribution seemed to slightly vary across groups ( $\chi^2(21)=55.15, p<.001$ ). There were also slight differences in parent education ( $\chi^2(21)=52.67, p<.001$ ) as parents in the Middle and High Spark groups completed high school and college more than those in the No and Low Spark groups.

#### Online Use

Because interest-driven learning is often facilitated by digital media (Ito et al., 2013), we examined whether Spark time or intensity was related to the average amount of hours online per week. There were no differences in online use amongst spark intensity groups or interaction between spark group and type of spark ( $F(26)=.570, p=.960$ ). Not surprisingly, however, there was a main effect for type of spark ( $F(16)=3.442, p<.001$ ), wherein youth who reported their main spark

in computers/electronics reported significantly more time spent online ( $M=20.72, SE=1.12$ ) than those who reported sports ( $M=11.14, SE=1.02$ ), being in nature ( $M=11.97, SE=2.08$ ), studying/reading ( $M=12.03, SE=1.08$ ), or arts ( $M=14.48, SE=0.96$ ) as their main Spark.

#### Relationship of Spark Intensities to Well-Being Outcomes

Next, we conducted three separate MANOVAs to examine how having a spark was related to social behaviors, academics, and well-being. For these analyses, we included the No Spark group to investigate the continuum from not having a spark to the highest level of spark. Thus, we had all four groups of participants in all of the reported analyses (No Spark, Low Spark, Moderate Spark, and High Spark) Bonferroni post-hocs analysis results are reported for each MANOVA separately.

#### Social Behaviors

The overall MANOVA for social behaviors was significant ( $F(12, 3363.041)=20.442, p<.001$ ), suggesting that there are significant differences among the spark groups worthy of further investigation. As can be seen

TABLE 3  
Mean and Standard Error of Academic-Related Outcomes by Spark Group

	Mastery Goals		Attendance		Effort		Grade Point Average	
	Mean	Std. Error	Mean	Std. Error	Mean	Std. Error	Mean	Std. Error
No Spark	2.62 <sup>a</sup>	0.04	0.71 <sup>a</sup>	0.02	2.92 <sup>a</sup>	0.05	3.06 <sup>a</sup>	0.04
Low Spark	2.60 <sup>a</sup>	0.05	0.50 <sup>ab</sup>	0.02	2.94 <sup>a</sup>	0.05	3.20 <sup>a</sup>	0.05
Moderate Spark	2.91 <sup>b</sup>	0.03	0.18 <sup>b</sup>	0.01	3.13 <sup>b</sup>	0.03	3.38 <sup>b</sup>	0.03
High Spark	3.28 <sup>c</sup>	0.03	0.36 <sup>b</sup>	0.02	3.35 <sup>c</sup>	0.04	3.43 <sup>b</sup>	0.03
MANOVA	$F=70.354$	$p<.001$	$F=12.826$	$p<.001$	$F=23.713$	$p<.001$	$F=21.285$	$p<.001$

Note. Different letters denote significant differences between spark groups (rows) on the particular outcome (columns) as found in post-hoc group comparisons. For example, the means of “a” and “b” are significantly different from each other, whereas there was no significant difference between “a” and “ab.”

TABLE 4  
Mean and Standard Error of Well-Being Outcomes by Spark Group

	<i>Hopeful Purpose</i>		<i>Positive Future</i>		<i>Worry</i>	
	<i>Mean</i>	<i>Std. Error</i>	<i>Mean</i>	<i>Std. Error</i>	<i>Mean</i>	<i>Std. Error</i>
No Spark	2.87 <sup>a</sup>	0.03	2.91 <sup>a</sup>	0.06	2.51 <sup>a</sup>	0.04
Low Spark	2.88 <sup>a</sup>	0.03	2.80 <sup>a</sup>	0.07	2.35 <sup>ab</sup>	0.05
Middle Spark	3.14 <sup>b</sup>	0.02	3.21 <sup>b</sup>	0.04	2.34 <sup>b</sup>	0.03
High Spark	3.52 <sup>c</sup>	0.02	3.88 <sup>c</sup>	0.05	2.29 <sup>b</sup>	0.04
MANOVA	$F = 163.681$	$p < .001$	$F = 76.561$	$p < .001$	$F = 6.059$	$p < .001$

Note. Different letters denote significant differences between spark groups (rows) on the particular outcome (columns) as found in post-hoc group comparisons. For example, the means of “a” and “b” are significantly different from each other, whereas there was no significant difference between “a” and “ab.”

from Table 2, even though the overall MANOVA for social good indicated differences among the spark groups, there were no between group differences when examining the post-hoc Bonferroni tests for vandalism. However, youth in the High Spark group reported more involvement as leaders, caring for the social good, and civic engagement. The Low Spark group had a lower average on these three social outcomes from the No

Spark group, but this was not always statistically significant (see Table 2 for details).

*Academic Outcomes*

The overall MANOVA for academic outcomes was significant ( $F(12, 4640.939) = 22.486, p < .001$ ), suggesting that there are significant differences amongst the different

TABLE 5  
Means and Standard Errors for Encouragement, Providing Funding, and Providing Transportation

		<i>Encourages</i>		<i>Funding</i>		<i>Transportation</i>	
Parent	Low Spark	3.20 <sup>a</sup>	0.07	3.11 <sup>a</sup>	0.07	3.21 <sup>a</sup>	0.07
	Moderate Spark	3.52 <sup>b</sup>	0.03	3.42 <sup>b</sup>	0.04	3.45 <sup>b</sup>	0.04
	High Spark	3.68 <sup>c</sup>	0.03	3.63 <sup>c</sup>	0.03	3.68 <sup>c</sup>	0.03
Pairwise $\chi^2$		$\chi^2 = 44.90$	$p < .001$	$\chi^2 = 50.69$	$p < .001$	$\chi^2 = 44.32$	$p < .001$
Extended Family	Low Spark	2.68 <sup>a</sup>	0.07	2.37 <sup>a</sup>	0.07	2.03 <sup>a</sup>	0.06
	Moderate Spark	3.00 <sup>b</sup>	0.04	2.65 <sup>b</sup>	0.04	2.30 <sup>b</sup>	0.05
	High Spark	3.48 <sup>c</sup>	0.04	3.13 <sup>c</sup>	0.05	2.87 <sup>c</sup>	0.06
Pairwise $\chi^2$		$\chi^2 = 137.55$	$p < .001$	$\chi^2 = 96.92$	$p < .001$	$\chi^2 = 109.07$	$p < .001$
Neighbors $\chi^2(6, 2514) = 15.565$	Low Spark	1.64 <sup>a</sup>	0.05	1.52 <sup>a</sup>	0.05	1.44 <sup>a</sup>	0.05
	Moderate Spark	1.92 <sup>b</sup>	0.04	1.55 <sup>a</sup>	0.03	1.54 <sup>a</sup>	0.03
	High Spark	2.52 <sup>c</sup>	0.06	2.05 <sup>b</sup>	0.05	2.02 <sup>b</sup>	0.05
Pairwise $\chi^2$		$\chi^2 = 134.44$	$p < .001$	$\chi^2 = 68.18$	$p < .001$	$\chi^2 = 74.93$	$p < .001$
Friends	Low Spark	2.57 <sup>a</sup>	0.07	1.94 <sup>a</sup>	0.07	1.80 <sup>a</sup>	0.05
	Moderate Spark	3.22 <sup>b</sup>	0.03	2.17 <sup>b</sup>	0.04	2.33 <sup>b</sup>	0.04
	High Spark	3.48 <sup>c</sup>	0.03	2.61 <sup>c</sup>	0.06	2.82 <sup>c</sup>	0.06
Pairwise $\chi^2$		$\chi^2 = 154.09$	$p < .001$	$\chi^2 = 66.14$	$p < .001$	$\chi^2 = 184.15$	$p < .001$
School $\chi^2(6, 2550) = 17.600$	Low Spark	2.31 <sup>a</sup>	0.07	1.71 <sup>a</sup>	0.06	1.42 <sup>a</sup>	0.05
	Moderate Spark	2.70 <sup>b</sup>	0.04	1.87 <sup>a</sup>	0.04	1.57 <sup>a</sup>	0.04
	High Spark	3.26 <sup>c</sup>	0.04	2.38 <sup>b</sup>	0.06	1.95 <sup>b</sup>	0.06
Pairwise $\chi^2$		$\chi^2 = 168.99$	$p < .001$	$\chi^2 = 75.12$	$p < .001$	$\chi^2 = 53.27$	$p < .001$
Mentor	Low Spark	2.96 <sup>a</sup>	0.09	2.38 <sup>a</sup>	0.13	1.97 <sup>a</sup>	0.10
	Moderate Spark	3.39 <sup>b</sup>	0.05	2.66 <sup>a</sup>	0.07	2.48 <sup>b</sup>	0.06
	High Spark	3.65 <sup>c</sup>	0.04	2.90 <sup>b</sup>	0.06	2.75 <sup>c</sup>	0.07
Pairwise $\chi^2$		$\chi^2 = 51.31$	$p < .001$	$\chi^2 = 15.07$	$p = .001$	$\chi^2 = 43.05$	$p < .001$
Adult $\chi^2(6, 2418) = 14.015$	Low Spark	2.11 <sup>a</sup>	0.08	1.67 <sup>a</sup>	0.06	1.44 <sup>a</sup>	0.06
	Moderate Spark	2.44 <sup>b</sup>	0.05	1.80 <sup>b</sup>	0.04	1.65 <sup>b</sup>	0.04
	High Spark	2.93 <sup>c</sup>	0.05	2.29 <sup>c</sup>	0.06	2.08 <sup>c</sup>	0.04
Pairwise $\chi^2$		$\chi^2 = 86.12$	$p < .001$	$\chi^2 = 66.52$	$p < .001$	$\chi^2 = 75.08$	$p < .001$

Note. Different letters denote significant differences between spark groups (rows) on the particular outcome (columns) as found in post-hoc group comparisons for each relationship. For example, the means of “a” and “b” are significantly different from each other, whereas there was no significant difference between “a” and “ab.”

spark groups (see Table 3). More specifically, the High Spark group reported a higher focus on learning (mastery goals), exerting more effort in school, and obtaining higher grades than the No and Low Spark groups. The No Spark group missed the most days of school, but did not differ from the Low Spark group on any of the academic outcomes. In this sense, having a low spark and not having a spark at all are quite similar, whereas having moderate or high sparks was associated with academic benefits for youth.

### *Affective Outcomes*

In examining the affective nature of youth across the spark groups, the overall MANOVA for affective outcomes was significant ( $F(9, 4405.215) = 55.016, p < .001$ ), suggesting that there are significant differences among individuals based on sparks (see Table 4). Youth in the High Spark group reported higher levels of hopefulness and purpose, a positive future outlook, and less worrying. The Low Spark and No Spark groups were lowest in their sense of hope/purpose and positive future outlook, and highest in worrying.

### Relational Supports for the Development of Sparks

A single model incorporating the latent class profiles and relational supports (i.e., encouragement, funding, and transportation) was run using MPlus7 (Asparouhov & Muthén, 2013). We report the overall Chi-Square for the between group comparison and pairwise analyses in Table 5. For all forms of relationships, the High Spark group tended to receive the most encouragement for their spark, while the Low Spark group reported the lowest levels of encouragement and the Moderate Spark group reported moderate levels. This pattern was also apparent for providing financial support for spark-related activities, with the High Spark youth receiving the most funding for their spark, while the other groups received progressively less. Although the Low and Moderate Spark groups did not differ significantly across relationships with regards to transportation, the High Spark group tended to report the highest levels of others providing them transportation.

## DISCUSSION

In the current study we were interested in exploring intense interest areas identified as “sparks,” by a large, ethnically-diverse group of 15-year-old adolescents, the extent to which such sparks were related to a range of developmental outcomes, and the role of relationships in supporting spark development. Youth identified a wide range of sparks, and spark intensity was positively

associated with positive outcomes and supportive relationships.

### The Nature of Sparks

Profile-centered analyses suggested that sparks could be characterized by the intensity of positive feelings, immersion, and utility that youth find when engaged. Although youth were prompted to answer affirmatively only when they had deep interests or passions (i.e., “this spark is more than just interesting or fun for them. They are passionate about it”), the intensity of their commitment varied considerably, as has been previously found with regard to other motivational and psychological constructs (e.g., Csikszentmihalyi, 1999; Wigfield, Eccles, Schiefele, Roeser, & Davis-Kean, 2006).

And, although the question about sparks was not focused on a specific content, it is interesting to note that more youth in the Low Spark group reported that computer/electronic use was their spark than youth in the Moderate and High Spark groups. Youth in this group spent many more hours per week online. Computers and other forms of digital media are often used in creative and skill-enhancing ways (e.g., advanced gaming, programming, blogging, or video production) (Ito et al., 2013), and are a major channel for youth to pursue interest-driven learning. Yet, other popular online activities, such as watching YouTube videos and social networking, are both more common and passive in nature (Lenhart et al., 2010). Recent findings point to an association between high levels of this latter form of engagement and negative social comparisons (Pantic et al., 2012; Whitehill et al., 2013). Future studies should differentiate the extent to which online activities are pursued in the context of interest-driven learning across the domains (e.g., musical instruction, engagement in learning communities) versus more passive engagement.

Youth in the Low Spark group were also more likely to describe their interest as related to “studying, reading, research, or other ways of learning.” Like some forms of computer use, these are generally more solitary, less active pursuits which, although enriching, may involve fewer opportunities for the kinds of scaffolded support and challenge that are more characteristic of the sense of flow (Abuhamdeh & Csikszentmihalyi, 2012a, 2012b).

By contrast, higher levels of spark appear to occur through pursuits that require more active social engagement such as sports, drama and dance, participating in politics, or serving others. Activities that include social interactions present more opportunities for the kinds of cooperative learning and feedback that can lead to optimal states (Abuhamdeh & Csikszentmihalyi, 2012a, 2012b). More research is needed to identify the specific types of activities within these somewhat broad categories

and their particular associations with outcomes. Likewise, it will be important to understand the mechanisms that account for these associations. The more active nature of the Moderate and High Spark relative to the Low Spark activities also imply metabolic and other physiological corollaries which, in turn, can heighten learning and engagement (Bläsing et al., 2012; Winter et al., 2007).

#### Relationship of Spark Intensities to Well-Being Outcomes

Next, we explored associations between levels of sparks and outcomes. Although there were no group differences in vandalism, those in the High Spark group reported the most social involvement, suggesting that intensive activities provide a rich context for the development of peer and intergenerational relationships. These same High Spark youth also report achieving higher levels of mastery, missing fewer days of schools, working harder than others in school, and having a stronger focus on learning and developing in school, in line with research suggesting that preference influences learning processes and outcomes (Ben-Eliyahu, 2011; Ben-Eliyahu & Linnenbrink-Garcia, 2013). Engaging in favored activities may not only enhance youth's general energy levels and readiness to learn (Bläsing et al., 2012; Cowley, Ravaja, & Heikura, 2013; Winter et al., 2007), but also contribute to a stronger connection to the school and determination to excel more generally. In this way, schools may enjoy the positive benefits of High Spark youths' broadened interest in learning beyond the particular focus of their interests. Youth who are deeply engaged in interest-driven activities may be transferring the drive and discipline that is necessary for skill development in that domain to positive experiences and adaptive self-regulation in learning to their schoolwork, the community, and other aspects of their lives. It is therefore not surprising that High Spark youth also have a higher sense of purpose and positive future outlook, and report being less worried than their No and Low Spark counterparts. Longitudinal research is needed to determine the direction of these associations, as it could also be argued that those with strong social and regulatory skills are more likely to develop sparks (Tough, 2012). Developmental theory and research, however, (Benson, Scales, Hamilton, & Sesma, 2006; Lerner, Brentano, Dowling, & Anderson, 2002) would more likely support bi-directional relations between sparks, social skills, and self-regulation over time.

Taken together, these findings also suggest the benefits that could derive from schoolwork being more intentionally connected to students' sparks. Particularly as nearly a quarter of high school students report being bored in school every day (Yazzie-Mintz, 2010), explicit efforts to help students identify and develop knowledge

and expertise around their sparks, and to build interest-driven learning, may contribute to student achievement (Ito et al., 2013). This sort of connected learning could help facilitate active learning across developmental settings and shift the way we approach education and learning (Ito et al., 2013).

#### Relational Supports for the Development of Sparks

Compared to youth in the Low or Moderate Spark groups, youth in the High Spark group reported that parents, extended family members, neighbors, friends, adults at school, "other adults," and mentors tended to provide higher levels of transportation to the spark activity, funding for spark-related expenditures, and encouragement to continue in the spark activity. Importantly, this was true for "other adults" in youth's lives, for example, coaches or other adults in a youth organization or after-school program, perhaps because of the constraints prescribed by those roles and settings and the low ratio of adults to youth in many sports programs and settings. Nevertheless, a recent study with more comprehensive information on the coaching relationship reported that the more coaches created a "task-involving" climate (parallel to the pursuit of sparks as described herein), the more committed athletes were to continuing in their sport, and the less likely they were to cheat (Ntoumanis, Taylor, & Thorgeresen-Ntoumani, 2011). Fostering a learning environment that deemphasizes appearing competent and focuses on developing and learning (i.e., mastery goal structure) is also related to a lower need for seeking approval from others in order to feel a sense of self-worth (O'Keefe, Ben-Eliyahu, & Linnenbrink-Garcia, 2013), thereby contributing to positive development. In this way, having a spark may also focus the youth away from situations in which their self-worth is contingent on performance rather than learning and enhancing one's skill set.

Our findings are consistent with a growing body of research that suggests that young people's subjective well-being is derived from engagement in satisfying activities and the developmental relationships and sense of connectedness that such engagement provides (Larson, 2011; Seligman, 2002; Seligman & Royzman, 2003). Importantly, a range of adults (not just parents) provided key support for developing interest-driven interest. Particularly among youth with limited social and cultural capital, caring relationships with nonparent adults appear to provide valuable exposure to and compensatory support for pursuing interest activities and domains. Such exposure, in turn, may facilitate identity development by providing experiences on which children and adolescents can draw to construct their sense of self (Yates & Youniss, 1996). Indeed, Waterman (1982) has proposed that activities provide opportunities for

discovering special talents and abilities and are thus a primary source through which identity is formed.

Beyond this function, participation in prosocial activities and settings may expose youth to more socially desirable or high-achieving peer groups with whom they can identify and forge shared interests (Fredricks & Eccles, 2006). For caring adults to facilitate this process, it will be important to continue to explore how sparks develop and the role of social relationships in shaping these interests. The current study adds to knowledge about how developmental relationships work to promote learning and other positive outcomes in adolescence, but these operative pathways should be further explored for their basic and applied scientific implications.

### Limitations

Data were collected via an online, cross-sectional self-report survey and, consequently, it is impossible to determine the direction of the effects. As mentioned above, youth intense interests might be particularly appealing to adults, such that close connections with caring adults may be the byproduct of intense interests rather than a cause of it. Youth who have intense interests may be primed for higher levels of involvement with adults than are peers who lack these qualities. Werner and Smith (1982) observed that youth who have thrived despite adversity tend to have hobbies or other interests and a unique capacity to engage with adults through those activities. Additionally, this sample was drawn from 15 year olds whose families were already part of an ongoing panel that receives incentives to enroll in the panel and participate in research studies (Scales et al., 2011). This willingness to participate and the access to online surveys might make this sample less vulnerable and more developmentally advantaged than a truly representative sample of American 15 year olds. Thus, more research is needed to examine how developmental assets and developmental relationships across a wider range of youth provide opportunities, and thereby support the development of deep interests or sparks.

More research is also needed to expand beyond the limited age range of this sample and examine how interest-driven passions are shaped from a younger age. Although a common belief is that youth change their minds frequently, Low and Rounds (2007) found that vocational interests change very little. Likewise, more research is needed to determine how crucial it is to have stable interest-driven passions. Perhaps the consistency is not a critical component if the intensity of the interest is a driving ingredient of resilience. That is, it might not matter if youth lose and gain new interests over time so long as there is a depth of commitment. In fact, the versatility might actually enable youth to gain a wider range of skills and explore possibilities. This possibility may be

particularly true for younger adolescents, for whom exploration and frequent change of interests is both a common and necessary part of development (Scales, 2010). Longitudinal methods would allow assessment of the stability of sparks, and how changes in developmental relationships and changes in spark stabilities affect positive outcomes.

Parents of youth in the Moderate and High Spark groups tended to have slightly higher levels of education than youth in the Low Spark and No Spark groups, suggesting that they may have had more resources to devote to the development of their children's interests. Future research should explore how such factors as parent education, work schedules, socioeconomic status, and family size influence the development of interest-driven passions in youth.

There might also be issues with participant scaling in their answering of questions due to shared method variance. Variability across outcomes and providers of support, however, suggest that the findings were not simply the result of response bias. For example, although the spark groups differed on some dimensions, they did not differ in others (e.g., anti-social, prosocial behaviors), and the findings were not significant for the very broad category of 'other adults.' Nonetheless, to mitigate shared method variance issues, future research should collect data from multiple reporters, especially in relation to perceptions of support provided for spark development.

Despite these limitations, this study contributes to our understanding of young people's sparks and how supporting their development may contribute to positive youth development. Taken together, our results highlight the variation in intensity with which youth approach their interests and the important role of social resources. To the extent that all youth are provided with opportunities to explore and pursue their deepest interests, the next generation of young people will be in a better position to pursue activities that bring them happiness, well-being, and more positive contributions to their schools, communities, and society.

### ACKNOWLEDGMENTS

The authors gratefully acknowledge the support of the MacArthur Foundation Research Network on Connected Learning, the Best Buy Foundation, and MENTOR: The National Mentoring Partnership.

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